

## REMARKS

### **Status of the Claims**

Claims 1-45 are currently pending. As a result of the restriction and election requirements, claims 5, 7-10, 13-14, and 29-45 are withdrawn. Therefore, claims 1-4, 6, 11-12, and 15-28 are currently pending and under examination.

By this Amendment, claims 17-18, 21, and 26-28 are currently amended. No new matter is added as a result of the claim amendments. The amendments to claims 17-18 and 27-28 provide the corresponding metric unit conversions to the recited English units. The amendment to claim 26 addresses clerical issues. Other claim amendments are discussed *infra*.

### **Amendment to the Abstract**

An amendment to the Abstract is presented to address a typographical or clerical error.

### **Unit Conversions in the Specification and Claims**

Citing MPEP § 608.01(IV), the U.S. Patent and Trademark Office (PTO) has requested that English units presented in the specification and claims be updated to metric (S.I.) units, followed by the equivalent English units.

Amendments to the Specification. Respectfully, it is the Applicant's belief that this request by the PTO is not required by statute or regulation. However, for the convenience of the Office and to expedite the prosecution of the application, Applicants have amended the specification by providing replacement paragraphs [0017] and [0018] to recite what Applicants believe is the equivalent metric (S.I.) unit for any English units in the original disclosure, while retaining the disclosed English units in parentheses. Specifically, Applicants have replaced "ounces" with "grams" and "gallons" with "liters" as appropriate. To the extent that Applicants inadvertently present an incorrect metric (S.I.) unit conversion as corresponding to the English unit presented in the original specification and claims, the English unit presented in the original specification and claims controls.

Amendments to the Claims. Claims 17-18 and 27-28 are also amended to provide what Applicants believe is the equivalent metric (S.I.) unit for the English units recited in the original claims.

### **Oath / Declaration**

According to the Office Action, the oath or declaration is defective because the inventive entity in this national stage application is different than the inventive entity in the corresponding international application PCT/US2003/038118. This determination is based on the inclusion of Peter Gouldthorpe as an inventor in the international application, but not in the executed declaration filed pursuant to 35 U.S.C. § 371(c)(4) in this national stage application.

Applicants believe that no change in the inventive entity was effected under PCT Rule 92*bis* to name the correct inventive entity of Fred Busch and Steve R. Burwell. Therefore, in accordance with 37 C.F.R. § 1.497(d), Applicants file herewith the following documents to correct inventorship:

(1) a Petition under 37 C.F.R. § 1.47(a) to correct inventorship due to misjoinder of Peter Gouldthorpe, and in view of Mr. Gouldthorpe's refusal to execute a statement as required under 37 C.F.R. § 1.497(d)(1);

(2) a Statement of Facts by Applicants' undersigned representative, David E. Wigley, in support of the § 1.47(a) petition;

(3) pursuant to 37 C.F.R. § 1.47(a), the processing fee set forth in 37 C.F.R. § 1.17(g);  
and

(4) the written consent of the assignee under 37 C.F.R. § 1.497(d)(3), consenting to the deletion of Mr. Gouldthorpe from the inventive entity set forth in the International Application.

The correct inventorship of this U.S. national stage application is Fred Busch and Steve R. Burwell, and a declaration executed by Messrs. Busch and Burwell was filed on November 7, 2006. Applicants do not believe that a substitute declaration under 37 C.F.R. § 1.67 is required. Respectfully, Applicants request PTO acknowledgement that the papers filed in accordance with 37 C.F.R. § 1.497(d) are accepted by the Office and the declaration filed on November 7, 2006 in the present application is not defective.

### **Claim Objections**

An amendment to claim 26, which addresses the misspelling of the term "ratio" is presented in this paper, and Applicants respectfully request the PTO acknowledge that this

objection has been removed.

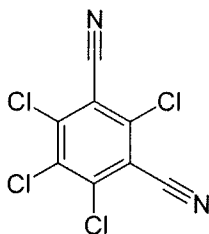
**Rejections of Claims 21-28 under 35 U.S.C. § 112, Paragraph 2**

According to the Office Action, claims 21-28 are rejected under 35 U.S.C. § 112, second paragraph, because the term “substantially” in claim 21 is a relative term which renders the claim indefinite. This rejection is obviated by the amendment of claim 21 to delete the term “substantially”. Applicants respectfully request that this rejection be withdrawn.

**Rejections of Claims 1, 2, 4-6, 11 and 15-20 under 35 U.S.C. § 112, Paragraph 2**

Claims 1, 2, 4-6, 11 and 15-20 are rejected under 35 U.S.C. § 112, second paragraph, because the indicated claims recite the term “chloronitrile”. According to the PTO, the specification and claims disclose chlorothalonil as the only chloronitrile compound, and on this basis, the PTO rejects claims 1, 2, 4-6, 11 and 15-20 as being indefinite. Specifically, the PTO alleges that the “instant specification does not provide any guidance for one of ordinary skill in the art to determine which chloronitrile compounds will fall within the scope of this invention.” (Office Action, page 5).

Respectfully, Applicants traverse this rejection. The disclosure of the term “chloronitrile” is understood by one of ordinary skill to constitute a partial structure that includes both chlorine and nitrile moieties. By way of example, in one embodiment, the “chloronitrile” is chlorothalonil, which has the following structure that includes both chlorine and nitrile moieties:



According to MPEP § 2173.05(t), “[a] claim to a chemical compound is not indefinite merely because a structure is not presented or because a partial structure is presented.” (Emphasis added.) Therefore, the term “chloronitrile” in claims 1, 2, 4-6, 11 and 15-20 is definite because it particularly points out and distinctly claims a structure that is understood by one of ordinary skill in the art.

If the scope of the subject matter embraced by the claims is clear, then the claims comply with 35 U.S.C. 112, second paragraph. *See* MPEP § 2173.04(B). For at least these reasons, Applicants maintain that claims 1, 2, 4-6, 11 and 15-20 are definite under 35 U.S.C. § 112, second paragraph, and respectfully request that this rejection be withdrawn.

**Rejection of Claims 1-4, 6, 11-12, and 15-28 under 35 U.S.C. § 103(a)**

According to the Office Action, claims 1-4, 6, 11-12, and 15-28 are rejected under 35 U.S.C. § 103(a), as being unpatentable over the combination of J. Pesticide Sci. 1977 by Sakurai *et al.* (“Sakurai”) and US 2003/0055096 by Oguri (“Oguri”), in view of US 2,531,463 to Pryor *et al.* (“Pryor”). Applicants respectfully traverse this rejection for at least the following reasons.

According to the Office Action, it appears to be the PTO’s position that one of ordinary skill in the art would be motivated to use chlorothalonil and trichloromelamine in combination, based upon the following line of reasoning (Office Action, p. 8, first paragraph): (1) Sakurai and Oguri teach the need to combine agricultural active ingredients for adequate control of bacteria and fungi; (2) Sakurai and Oguri teach chlorothalonil is a suitable fungicidal composition for plants; and (3) Pryor teaches that trichloromelamine as a suitable active fungicide for treating fruits and vegetables. Based on these purported teachings of all three references combined, the PTO concludes that one of ordinary skill would be motivated by these disclosures to use chlorothalonil and trichloromelamine in combination as an antimicrobial composition, thereby rendering the present claims *prima facie* obviousness.

A patent may not be proven obvious “merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418, 127 S. Ct. 1727, 1741 (2007). Instead, it is necessary to identify some “apparent reason to combine the known elements.” 127 S. Ct. at 1740. That reason should not merely be the result of the examiner having read Appellants’ specification. Here, the examiner’s combination of references would only be obtainable using improper reliance on hindsight reconstruction which depends on “the inventor’s disclosure as a blueprint for piecing together the prior art.” *Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1320 (Fed. Cir. 2004). As detailed below, one of ordinary skill in the art would not, without using Applicants’ specification as a blueprint, have been led to start from Sakurai’s and Oguri’s disclosures, to seek the teachings of Pryor, and

then—when considering the prior art for all that it teaches—combine or modify these teachings to derive Applicants’ claimed composition.

**A) There is no *Prima Facie* Rationale for Combining Sakurai, Oguri, and Pryor.**

Respectfully, Applicants traverse this rejection at least because Sakurai, Oguri, and Pryor do not suggest making the claimed subject matter.

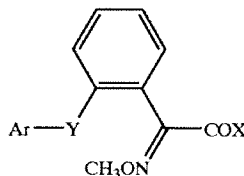
**Sakurai.** Sakurai discloses minimum inhibitory concentrations (MIC) of various compounds against isolates of certain bacteria (*Erwinia carvotovora* and *Pseudomonas lachrymans*) and fungi (*Alternaria mali*, *Alternaria kikuchiana*, *Botrytis* sp., and *Sclerotinia* sp.). The results are plotted in MIC “correlograms” (Figs. 1-10), which combine data for two different sets of experiments, each experiment using a single compound, as a probe to cross-resistance. Thus, the Sakurai experiments (Figs. 1-10) do not test a mixture of compounds; rather, they combine data for different sets of experiments, each experiment using a single compound.

An examination of Sakurai’s chlorothalonil data reveal *more chlorothalonil-resistant* strains of *Botrytis* sp. *than non-resistant strains* (Figs. 6 and 7). These data are accompanied by the warning that, “some carbendazim-resistant strains of *Botrytis* sp. showed double-resistance to chlorothalonil (Fig. 7)” (emphasis added; p. 252, col. 1, lines 1-3). Of all the organisms tested, only the *Sclerotinia* sp. isolates appear to be reliably sensitive to chlorothalonil (Fig. 9); however, carbendazim was much more potent against this *Sclerotinia* sp. than was chlorothalonil (Fig. 10). In sum, Sakurai teaches away from chlorothalonil as a suitable fungicide, in preference for other compounds such as carbendazim. Therefore, one of ordinary skill would not look to Sakurai to support a selection of a chlorothalonil for use in a formulation over carbendazim and possibly other compounds disclosed.

Sakurai fails to present any data for *Crinipellis perniciosa*, the witches’ broom fungus. Moreover, Sakurai fails to teach compositions that combine chlorothalonil with any other antimicrobial compound. Even if Sakurai did suggest further experiments, a proposition that Applicants dispute, one of ordinary skill might select carbendazim as the lead compound for further experiments, but not chlorothalonil (*see* Fig. 10), because carbendazim exhibits greater effectiveness. Therefore, at best, Sakurai provides an invitation for more experimentation using carbendazim, with no clear direction for what to try next to improve its utility.

**Oguri.** Oguri discloses chlorothalonil as one of numerous compounds from a “laundry

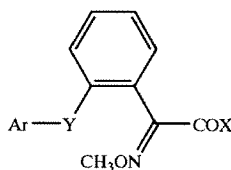
list” that can be used in antifungal compositions, but only when these numerous compounds are used in combination with the compounds of formula I:



For example, the disclosure at paragraphs [0004]-[0007] setting forth the specific composition ingredients is representative of Oguri's disclosure:

[0004] In detail, the present invention provides a fungicidal composition characterized by containing as active ingredients

[0005] (a) a compound represented by the formula I:



[0006] (wherein Ar is a substituted or unsubstituted phenyl group, Y is an oxygen atom, an oxymethylene group or a methyleneoxy group, X is NR<sub>1</sub>R<sub>2</sub> or OR<sub>3</sub>, and R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub>, which may be the same or different, are hydrogen atoms or alkyl groups having 1 to 4 carbon atoms), and

[0007] (b) at least one compound selected from the group consisting of ethylenebis(dithiocarbamate) type fungicidal compounds, N-(3,5-dichlorophenyl)imide type fungicidal compounds, Chlorothalonil, phthalimide type fungicidal compounds, anilide type fungicidal compounds, Cymoxanil, Fosetyl, cyanopyrrole type fungicidal compounds, anilino heterocyclic fungicidal compounds, benzimidazole type fungicidal compounds and their precursors, sulfur, copper compounds, and carbamate type fungicidal compounds for controlling fungi tolerant to benzimidazole type fungicides.

The PTO cites to the Abstract and paragraphs [0007], [0039], [0052]-[0053], and Formulation Examples 13-18, for the proposition that Oguri teaches chlorothalonil as a preferred fungicide applied to plants or soil. Yet, in each cited passage, chlorothalonil must be used in combination with the compounds of formula I.

Oguri fails to disclose the use of chlorothalonil *absent* its combination with compounds

of formula I. Moreover, chlorothalonil is one of numerous recited compounds and compound “types”—each type itself encompassing a larger number of species—that can be used in combination with formula I (*see* paragraphs [0004]-[0007], reproduced *supra*). There is nothing in Oguri that points to chlorothalonil as the best lead for combining with formula I, let alone the best lead for combining with some other unspecified compound, as the PTO proposes. Such a proposal is simply a call for open-ended experimentation, with no direction of how to proceed. There is nothing in Oguri that that would provide any motivation to make a combination of chlorothalonil with any compound other than with formula I.

Further, Oguri warns that there is a fundamental lack of predictability in this technology. Specifically, and as pointed out in the Office Action (page 6, last para.-page 7, top), Oguri cautions the reader that “there are a great variety of diseases to be controlled and it is difficult to specify the kind of the disease in practice and control the disease by choosing a fungicide suitable for the disease.” (*See* Oguri at [0002].) In view of this admitted uncertainty, Oguri fails to present any data for *Crinipellis perniciosa*, the witches’ broom fungus. At best, Oguri requires combining chlorothalonil with formula I, but by Oguri’s own admission, there is no reasonable expectation that this combination, not to mention chlorothalonil alone or in combination with compounds other than formula I, will be effective for any given disease.

**Pryor.** Pryor does nothing to cure the deficiencies of Sakurai and Ogura or suggest making the claimed combination. According to Pryor, bacterial and fungal decay of fruits and vegetables can be inhibited by treatment with compositions containing both (1) Cl<sub>2</sub> (free chlorine) and (2) chlorinated organic amino compounds. Suitable compositions can be prepared by chlorinating the parent organic amino compound *in situ*, “employing chlorine in excess so that the presence of free chlorine is assured” (*see* col. 2, lines 1-10). The function of excess free chlorine, according to Pryor, is functional, to “replace the lost chlorine in situ so as to maintain the proper concentration of combined chlorine” (*see* col. 3, lines 30-41). While Pryor discloses that fungal decay can be treated with an N-chloro amino compound in the absence of free chlorine, nevertheless, free chlorine is subsequently added to regenerate the N-chloro amino compound *in situ* to replace the chlorine split off from the chloroamine (*see* col. 8, line 70-col. 9, line 7). In fact, the sole Example provides a composition containing 5% to 15% free chlorine (col. 9, lines 21-23).

Of the (at least) six expansive classes of organic amino compounds disclosed by Pryor as suitable for preparing the Cl<sub>2</sub> (free chlorine)/chlorinated organic compound compositions (*see* col. 7, line 37-col. 8, line 34), only one class mentions melamine, and then it is among numerous other compounds, including, “amino derivatives of cyanuric acid such as melamine, hydroxy-melamines, alkyl or acyl substituted melamines or salts thereof, dicyandiamine and the like” (col. 8, lines 16-20). Even when melamine is used, its compositions are prepared so as to contain 5% to 15% free chlorine (col. 9, lines 21-23). Therefore, Pryor, whether combined with Sakurai and Oguri or not, does not teach or suggest making the claimed invention.

The determination of obviousness is not whether a person could, with full knowledge of the Applicants’ invention, reproduce it from prior art or known principles. The question is whether it would have been obvious, without knowledge of the Applicants’ achievement, to produce the same thing that the Applicants produced. This judgment must be made without the benefit of hindsight. It is improper to take concepts from other compositions and inventions and change or combine them in light of the now-known template of the Applicants’ disclosure, without direction in the prior art that would render it obvious to do so.

Accordingly, no case of *prima facie* case for obviousness has been established. Obtaining the mixture of chlorothalonil and trichloromelamine from the combined Sakurai, Oguri, and Pryor references can be result only from hindsight, using the subject application as a blueprint.

**B) Even if the References are Combined, the Claimed Subject Matter Would Not Result.** As discussed, there is no *prima facie* rationale for combining the cited references. Moreover, even if Sakurai, Oguri, and Pryor were to be combined as the PTO has done, the claimed invention would not result. The PTO looks to Sakurai and Oguri to support the position that a combination of active ingredients that includes chlorothalonil is necessary. However, Sakurai warns of microorganism “double-resistance” to chlorothalonil, and in fact teaches away from chlorothalonil in favor of carbendazim. Oguri discloses many compounds, *one of which* is chlorothalonil, all used in combinations that require formula I. Respectfully, Applicants’ position is that no *prima facie* case based on Sakurai and Oguri has been put forth that requires chlorothalonil *at all*. At best, the combination of Sakurai and Oguri suggests a composition of



carbendazim and formula I, because carbendazim—not chlorothalonil—is the suggested lead compound from Sakurai and because Oguri's compositions require formula I.

The further combination of Pryor does nothing to address the deficiencies of Sakurai and Oguri. Pryor describes at least six sizeable classes of amino compounds that are suitable for preparing compositions containing free Cl<sub>2</sub> (chlorine) and chlorinated amino compound (*see* col. 7, line 37-col. 8, line 34). Only one class mentions melamine, and when melamine is used, its compositions are prepared so as to contain 5% to 15% free chlorine (col. 9, lines 21-23). Therefore, even when Pryor is combined with Sakurai and Oguri, the combination does not provide the claimed subject matter.

**C) There is No Reasonable Expectation of Success Were the References to be Combined.** Oguri sets out a “caution” as to a fundamental problem in this technology, that is, “there are a great variety of diseases to be controlled and it is difficult to specify the kind of the disease in practice and control the disease by choosing a fungicide suitable for the disease.” (Oguri at [0002].) Therefore, Oguri admits to the uncertainty and lack of predictability. Moreover, none of Sakurai, Oguri, and Pryor teaches or suggests any efficacy against *Crinipellis pernicios*a, the witches' broom fungus. By Oguri's own admission, there is no reasonable expectation that any combination set forth in any reference will be effective for any given disease. At best, the references set out a problem and invite further experimentation to address that problem.

Respectfully, Applicants maintain that the combination of Sakurai, Oguri, and Pryor fails to establish *prima facie* obviousness, at least because the references fail to suggest or to provide a reasonable expectation of success in making the claimed antimicrobial composition. Accordingly, Applicants respectfully request that this obviousness rejection be withdrawn and the claims allowed.

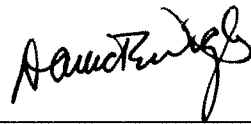
### CONCLUSION

The undersigned Attorney believes that each matter raised in the non-final Office Action dated November 8, 2010, has been responded to, and the amendments and response place the claims in condition for allowance. Applicants respectfully request allowance of the pending claims.

It is not believed that any additional fees are due, beyond those which may otherwise be provided for in documents accompanying this paper. However, in the event that additional extension of time, petition, or other fees are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. §1.136(a), and any fee required therefor (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 19-5029.

If there are any issues which can be resolved by a telephone conference or an Examiner's Amendment, the Examiner is invited to call the undersigned attorney at 404.853.8072.

Respectfully submitted,



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**Date: April 8, 2011**

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